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ABSTRACT

In the third and final year of its demonstration grant, the PIPE Project refined and expanded services to families in seven Pueblo Indian communities. Project staff and local Community Health Representatives (CHRs) completed 82 developmental assessments, made more than 400 home visits, and provided ongoing educational services to 27 handicapped infants and toddlers and their families. Project evaluation assessed the effect of paraprofessional training for CHRs, the impact of home intervention, and the handicapped children's developmental progress. In each case beginning and end-of-year results were compared using correlated t-tests. CHRs self-reports of knowledge and competency reflected significant growth in the four key areas addressed by inservice training, particularly interacting with parents. To measure the impact of home intervention, PIPE staff members completed the "Parent Behavior Progression" checklist with 21 families. Ratings indicated significant improvement in parenting skills over the year. Developmental assessments with 20 of the children served showed significant raw score gains; differences between predicted and observed gains were not significant. Correlations between project related variables and child progress suggest that parenting skills are related to rate of child progress, i.e., the project's aim of training parents also benefits the children. Ten tables of data are appended. (JHZ)

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FINAL REPORT

Pueblo Infant Parent Education Project

(PIPE PROJECT)

[1984]

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FINAL REPORT

Pueblo Infant Parent Education Project (PIPE Project)

Introduction and Overview

The PIPE Project has recently completed its third and final year of its HCEEP demonstration grant. Year III has involved both a refinement and expansion of project activities especially in the area of dissemination. During 1983-1984, 82 children were evaluated for services and 27 families received ongoing intervention through home visits by the project's staff and by local Community Health Representatives (CHRs). More than 400 home visits were made during Year III, a 33% increase over the number of home visits conducted during Year II. During Year III, ongoing inservice training was again provided to the CHRs through direct contact with project staff and through a series of 10 inservice workshops. Finally, the focal point of dissemination efforts was the production and distribution of a resource book on traditional Indian infant stimulation practices and their relationship to effective child development practices.

Evaluation data collected during the final year of the demonstration project was analyzed to assess the impact of various project activities on the CHRs, and the families and children served. As in previous years, the findings indicate that each target population has made statistically significant gains in areas where they were provided with services by the PIPE

Project. The CHRs reported gains in knowledge and competencies related to their working with families with handicapped and at risk infants; parents were rated higher in their parenting skills, and infants and toddlers demonstrated evidence of higher level of functioning in each of the assessment areas. These findings are described in greater detail below.

Goal Area: Paraprofessional Training: Community Health Representatives

Since the Community Health Representative play a crucial role in the PIPE service delivery model, PIPE staff have continued to provide them with both monthly inservice workshops and ongoing individual supervision and contact. During the past year the CHRs were involved in PIPE activities for approximately 8.8 hours per month per CHR. The largest portion of their time was spent on home visits, 3.3 hours per month, and taking part in group training, 2.8 hours per month. Table 1 presents a summary of CHR involvement in PIPE Project activities during 1983-1984. A list of the 10 inservice workshops for the CHRs is presented in Table 2. The impact of the PIPE Project on the CHRs has been assessed in three ways: (1) CHR feedback on the quality of the inservice workshops; (2) a comparison of CHR self ratings (needs assessment) between January, 1982 and April, 1984; and verbal feedback from 2 of the CHRs and the project staff during an onsite visit by the evaluator in June, 1984.

CHR feedback regarding informativeness, interest, and likelihood of using information from inservice workshops is presented in Table 3. The CHR ratings indicate that overall they found the inservice workshops to be highly informative,

interesting, and most important, they reported that there is a very strong likelihood that they will incorporate the workshop material into their work in their local communities. A comparison of CHR ratings of inservice workshops during Year II and Year III suggests that while they felt that the workshops were valuable both years, their ratings were even higher during the final year of the demonstration project.

Once again information obtained from the structured PIPE CHR Needs Assessment was used to determine if self reports of knowledge and competency were improving in four key program areas: (1) normal and abnormal development; (2) interacting with parents; (3) health management; (4) stimulation and intervention in the home. The needs assessment ratings and correlated t-test results are presented in Table 4. Statistically significant ($p < .05$) gains were made in each of the key program areas. The area of largest gain was in interacting with parents. At the start of the project the CHRs felt that they had the greatest needs in this area. Now not only have their feelings of competency in working with parents increased, but it is no longer rated as the area of greatest need among the CHRs. While the changes in CHR competencies since the start of the project are readily apparent form the changes in self report ratings over the three year interval, there is also evidence that the CHRs needs assessment ratings were slightly higher during Year III than Year II, overall post-test rating for Year II was 3.7 and for Year III it was 3.9. This suggests that the CHRs continued to acquire new skills and greater feelings of

confidence throughout the period of the project's development. While there is evidence that the CHRs continued to learn, the data also clearly indicate that paraprofessional training involves ongoing training as well as personal contact and supervision.

One of the original objectives of the PIPE Project had been to train the CHRs such that they could carry out a major portion of the direct intervention with the parents. For a variety of reasons, this objective was not achieved. The original plan called for a greater CHR time commitment to the PIPE Project activities. However large cuts in the Indian Health Service budget (which fund CHR activities) occurred just as the PIPE Project was beginning its first year of model development. The loss of funding meant that the CHRs had less time allocate to an ancillary program like the PIPE Project, which is educationally rather than medically oriented. In addition, the range of educational, speech, and motoric needs of these handicapped infants and toddlers make it very difficult to provide the CHRs with sufficient training to bear primary responsibility for working with parents and their children.

The CHRs with their intimate access to their own communities are able to help parents with at risk or handicapped infants to acknowledge the benefits of utilizing the services of the PIPE Project. The CHRs are available to provide emotional support during the initial phases of denial and anger when parents realize that their child may have special needs which they are not readily equipped to provide. Thus, in addition to their

limited provision of direct services via conducting screenings and taking part in some home visits, the CHRs provide the human linkage between the extended families and the outside educational service agency, i.e. the PIPE Project. Additional evidence that this collaborative effort has been working comes from the fact that the tribal councils from each of the pueblos wrote letters of support to the N.M. state legislature requesting state funding for the PIPE Project to continue after the demonstration phase was completed. The efforts of the tribal councils and the parents successfully impacted the state legislature which passed a special bill in February to fund the continuing work of the PIPE Project. Thus, it appears that the arrangement between the PIPE Project and the CHRs is both viable and appropriate to their local context.

Goal Area: Home Intervention

Since the start of the project, direct services have been provided on an ongoing basis by both PIPE staff and local CHRs to families in seven Pueblo Indian communities (see Table 5). During year III, more than 400 home visits were made to 27 families. Among the 21 families where impact evaluation data were collected, the mean number of home visits was 24.8 (standard deviation = 10.1) for the year. This works out to slightly more than two home visits per family per month. This is an increase from last year when there were only 1.5 home visits per month per family.

To assess the impact of the PIPE intervention in terms of the quality of the parent's interaction with their child, the "Parent Behavior Progression" (PBP) checklist (Bromwich, 1978,

1983) was used. The PBP, an observation based rating scale, was completed by a PIPE staff member at 6 month intervals. The information from the PBP was to be used to plan subsequent home visits. Results from a correlated t-test analysis of the initial and final PBP ratings indicated that there was a statistically significant improvement in parenting skills during the intervention period ($p < .05$). Parent ratings increased from 32.4 to 46.2 by the end of the intervention period (see Table 6).

In addition to the statistically significant changes during the intervention period, there is also evidence that the amount of change is positively correlated with the length of the intervention. Thus, parents who were in the program longer made larger gains than parents who received PIPE parenting training for relatively shorter periods ($r = .48$, $n = 17$, $p < .01$). Ongoing PIPE services continue to provide parents with new and effective parenting skills and attitudes.

Another mode for providing training and support to parents which is utilized by the PIPE Project is parent group meetings and potluck dinners. During Year III the PIPE Project sponsored a series of parent support meetings at one of the pueblos. This program was set up by a social worker from the Indian Health Service to give parents the opportunity to talk about their concerns in regard to raising a special needs child especially in terms of their ability and comfort talking with their families and the larger community about their child's needs. Four meetings and one potluck dinner were held between December, 1983 and March 1984. Of the six families who were receiving PIPE

services at this pueblo, attendance ranged from 3 to 5 parents at each of the meetings. An evaluation questionnaire was developed and administered at the second session and once again after the fourth and final session. No changes on parent ratings of comfort were observed. One obvious explanation for the lack of positive change is that the intervention interval was quite short, four meetings over a 6 week period. Perhaps a much longer interval is needed before parents will begin to feel more comfortable about discussing their feelings regarding their special needs child. Another possible explanation for the apparent lack of success may be attributable to the fact that sharing problems in a "public" forum is not a traditional part of the culture among this population of parents. For instance, group meetings might be much better received among the Navajo who utilize something analogous to support groups within the context of the Native American Church. Nonetheless, during the course of the year some parents who had resisted having their child labeled as a special needs child or who were anxious about speaking in public did begin to change. In fact, one parent who had been very resistant to having her child labeled spoke in front of a state legislative hearing to urge the legislature to provide funding for infants and toddlers with special needs.

In sum, the quantitative data from the Parent Behavior Progression and the qualitative data obtained from project staff and CHRs suggests that the use of ongoing home visits was an effective and efficient way to provide training and support for this group of parents. Once again, the PIPE Project experience

suggests that the mode of service delivery needs to be tailored to the practices of the local communities where the project is being implemented.

Goal Area: Child Progress

During Year III, from April 1, 1983 through March 31, 1984, 82 developmental assessments were completed and 27 children received ongoing services from the PIPE staff and the local CHRs. More than 400 home visits were made to provide direct service to infants and toddlers as well as their parents.

This section presents information regarding program impact on the children who received services during this period. Child progress data is presented for 20 of the 27 children who received home visits. comparative data for the remaining 7 children was not available for the following reasons: 5 children terminated the program prior to their scheduled post-testing time, 1 child was hospitalized frequently during the year and post-testing was not deemed feasible nor valid, and finally 1 child had not been in the program long enough for post-testing to be carried out. The mean age of the children at the time of entry was 32.1 months (standard deviation = 9.7) with the range from 7 to 40 months. The mean age at the time of post-testing was 37.4 months (standard deviation = 13.3) with the range from 16 to 61 months. There were 14 males and 6 females in the child progress database. Seven of the children were multihandicapped and 8 were at risk or delayed. The remaining 5 children were spread across 4 other handicapping conditions. Table 7 presents a breakdown of the

children in terms of handicapping condition by severity of handicap.

The evaluation instruments used to assess child progress were the Early Learning Accomplishment Profile (E/LAP) and the Bayley Scales of Infant Development. For children who were above the age norm for either of the primary instruments, the Learning Accomplishment Profile (LAP) and or the Stanford-Binet were used. Some children were tested once with the LAP but since no child was both pre-tested and post-tested with the LAP, no data will be reported on this instrument.

The test data indicate that as a group, the children made raw score gains between the pre- and post-intervention testing on all subscales from the E/Lap and the Bayley as well as in terms of mental age on the Stanford-Binet. These raw score improvements were statistically significant across each instrument and across each of the subscales within instrument. The data is presented in Table 8. It should be noted that while the group as a whole showed marked improvements in the functioning, some children made little or no observable progress during the intervention phase. Given the absence of a comparison group, it is impossible to determine if the intervention did, in fact, have a positive impact in terms of arresting or slowing a potential deterioration in functioning or if the intervention approach was simply not appropriate for this small group of children.

Given the fact that the group of children made statistically significant raw score gains on each of the assessment

instruments, the next evaluation question to be addressed is whether or not the rate of growth observed between pre- and post-assessment periods is greater than the rate of growth which would have occurred without the PIPE intervention. A larger observed gain versus the expected gain would be evidence of beneficial program impact (Sheehan, 1980). Since norms of young handicapped Native Americans are not available for the E/LAP, estimates of post-intervention performance were obtained by multiplying each child's pre-intervention E/LAP subscale rate of growth index (pre-intervention developmental age score divided by the child's pre-intervention age) by the child's post-intervention age. The estimated and observed post-intervention developmental age subscores are shown in Table 9. The correlated t-test analyses between the estimated and observed scores indicate that there are no statistically significant differences between the estimated performance and the observed performance for any of the E/LAP subscales. similarly, while norm referenced scores of the Bayley (Developmental Index) and the Stanford-Binet (Intelligence Quotient) also show post-intervention gains, the only statistically significant difference is on the motor subscale of the Bayley (see Table 8).

This data analysis suggests that as a group the children served by the PIPE Project are continuing to progress at the same rate as they leave infancy and enter the toddler phase of their development. This finding should not automatically be interpreted to mean that intervention had no impact on child progress. As noted above, it is possible that many of these

children would have demonstrated slowed rates of growth without intervention. Another possibility, which is suggested by a close examination of Table 9, is that there is a consistent pattern in the relationship between estimated and observed post-test scores on the E/LAP. Of the six subscales, three of the observed post-test scores were markedly higher than the estimated post-test scores. For the remaining three subscales the estimated scores were higher than the observed scores. The three subscales where the observed scores were higher than the estimated, were those subscales with the three lowest pre-test scores, i.e. fine-motor, cognitive, and language. Conversely the three subscales where the observed scores were lower than the expected were those with the highest pre-test scores.

This pattern is exactly the pattern that one would expect in a situation where the staff were tailoring the intervention to the child's primary deficit areas. This was the case with the PIPE project where the E/LAP was used to generate the intervention plan. One would expect to see accelerated development primarily in those areas which were targeted for intervention, and indeed this is what is suggested by the data presented in Table 9. Unfortunately, a more definitive answer will have to await either normed data for this population of handicapped infants and toddlers or data from a classical experimental design where there are treatment and control groups.

Finally, assuming that there is some educationally relevant impact from an innovative educational program such as PIPE, it is important to identify those program variables which contribute to child progress and to specify the linkages between these

variables and the outcome measures. Within the PIPE Project, seven variables have been identified as having a potential impact of child progress. Three of these variables are project related variables, PBP post-test rating, number of home intervention visits made by the PIPE staff and amount of time the CHRs spent in the home. Four other variables which could have an impact but which are not really under the control of the program, are the severity of the child's handicap, child's age, child's sex, and length of the intervention period. Table 3 presents a series of Pearson correlation coefficients which quantify the degree of association between various measures of change in child function and the potential impact variables.

The pattern of statistically significant correlations suggest that parenting skills have some relationship to the rate of child progress. However, the amount of CHR time in the home is negatively related to the rate of child progress, i.e. as CHRs spend more time in the home children do not gain as much. This finding of an apparent negative relationship between direct staff involvement and child progress is at first somewhat startling but it is readily explained when examined in the context of the severity of the child's handicap. It appears that staff and CHRs tended to spend more time with families with more severely children than with families of less impaired children. It is reasonable to expect that the rate of change over time as compared to a non-handicapped normative sample will be less for a group of severely handicapped children as compared to a group of mildly impaired children.

Overall the data in Table 10 suggest that the competencies that parents acquire, or already have are the only project controllable influence that positively affected the progress of the children served by the project. Therefore, the focus of the project to train parents shows evidence of also benefiting the children.

TABLE 1

CHR Involvement in PIPE Project Activities: Mean Hours Per Month

CHR	Developmental Screenings	Home Visits	Consultation	Group Training	Planning	Telephone Contact	Total per Mont
1	—	5.4	—	3.2	1.3	—	9.9
2	0.6	0.8	0.1	2.0	0.5	—	4.0
3	1.8	1.7	0.2	3.8	0.6	1.1	9.2
4	—	5.9	1.4	2.1	2.2	2.5	14.1
5	—	0.4	0.1	2.4	1.0	—	3.9
6	—	2.0	1.1	3.1	2.8	—	9.0
7	0.9	7.1	0.2	2.7	0.8	—	11.7
Total	3.3	23.3	3.1	19.3	9.2	3.6	61.8

TABLE 2

P.I.P.E. IN-SERVICE TRAINING WORKSHOPS

1983-1984

Theme: Evaluation and Intervention for the High Risk and Developmentally Delayed Infant

September 22	-	Genetic Causes of Developmental Disability
October 26	-	Intervention in a Center Setting: A Field Trip
November 17	-	Home Visiting Skills
December 15	-	Initial Assessment and Intervention
January 26	-	Evaluation and Intervention in the First Year
February 23	-	Intervention with Hearing Impaired Child
March 22	-	Intervention with Teenage Parents
April 26	-	Intervention with Language Delayed Child: Play and Language Development
May 24	-	Cultural Factors Influencing Service Delivery to Families of Handicapped Indian Children
June 28	-	Intervention with Adaptive and Emotional Behavior

TABLE 3

CHR Inservice Workshop Evaluation Ratings

Topic	Mean Ratings* Informativeness	Interest	Likelihood of use with Families	N
1. Genetic Causes of Developmental Disability	3.0	3.0	3.0	4
2. Intervention in a Center Setting	3.0	3.0	2.8	5
3. Home Visiting Skills	3.0	3.0	3.0	5
4. Initial Assessment and Intervention	2.9	2.9	2.6	7
5. Evaluation and Intervention in the First Year	2.9	2.9	2.9	7
6. Intervention with the Hearing Impaired	3.0	3.0	3.0	6
7. Intervention with Teenage Parents	3.0	3.0	3.0	6
8. Language Delayed Children	3.0	3.0	2.6	5
9. Cultural Factors Influencing Service Delivery to Families of Handicapped Children	2.8	3.0	2.8	5
Overall Rating	3.0	3.0	2.9	

* Ratings could range from 1 to 3 with 1 = No, 2 = Somewhat, 3 = Definitely

TABLE 4

CHR Needs Assessment Analysis : Correlated T-Tests

	Topic	N	Mean Pre-Training Ratings (1-82)*	Mean Post-Training Rating (5-84)	T-Value	One-Tail p-value
I.	Normal and Abnormal Development (4 items)	6	2.4 (0.5)**	3.8 (0.5)	5.4	< .01
II.	Interaction with Parents (2items)	6	2.2 (1.0)	3.8 (0.7)	2.7	.02
III.	Health Management (4 items)	6	3.4 (0.9)	4.2 (0.8)	2.2	.04
IV.	Stimulation and Intervention (6 items)	6	2.7 (1.1)	3.8 (0.9)	3.8	< .01
	Overall Rating	6	2.7 (0.6)	3.9 (0.6)	3.9	< .01

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* Ratings could range from 1 to 5 with 1 = limited knowledge, or not comfortable to 5 = understands well and can explain or feels very comfortable

** Stand. Deviation in parenthesis

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TABLE 5.

Families Receiving Intervention Services from the PIPE Project During Year III

Pueblo	# of Families Served
a. Cochiti	3
b. Jemez	5
c. Sandia	1
d. San Felipe	9
e. Santa Ana	1
f. Santo Domingo	6
g. Zia	2
	27

TABLE 6

Parent Training: Correlated T-Test Analysis of Pre-Intervention Versus Post-Intervention Ratings on the Parent Behavior Progression*

N	Mean Pre-Test Rating	Mean Post-Test Rating	T-Value	One-Tail P-Value
17	32.4*** (13.3)**	46.2 (11.2)	7.6	.01

* Four different forms of the PBP were used during the course of the PIPE Project depending on the child's age, Form 1 or 2, and the date of testing, Version 1978 or 1983. Data are included in this analysis only if the parent was rated with the same form for both the pre and post assessments.

** Standard Deviation in parenthesis

*** Maximum possible score could range from 56 to 77 depending on the version and the form used for the assessment.

TABLE 7

Handicapping Condition By Severity

Type of Handicap	Severity of Handicap			
	Mild	Moderate	Severe	Total
Speech Impaired		1		1
Hard of Hearing		1		1
Visually Impaired	1			1
Other Health Impaired		2		2
Multihandicapped			7	7
At Risk/Delayed	7	1		8
Total	8	5	7	20

Table 8

Child Progress: Pre-Test Versus Post-Test Correlated T-Test Analysis

Instrument	Scale	N	Pre-Test Mean	Post-Test Mean	T-Value	Two-Tail p-value
E/LAP (raw scores)						
	Gross Motor	14	55.4 (23.7)*	62.4 (29.2)	3.1	< .01
	Fine Motor	15	34.7 (23.5)	43.1 (26.1)	4.3	< .01
	Cognitive	15	40.9 (30.6)	57.6 (34.6)	6.3	< .01
	Language	15	18.8 (13.8)	29.3 (18.2)	4.3	< .01
	Self-Help	11	20.3 (14.4)	34.5 (13.8)	4.7	< .01
	Social-Emotional	15	20.3 (12.6)	24.5 (13.4)	3.3	< .01
Bayley Scales						
	Mental (raw score)	13	73.2 (47.8)	94.7 (53.4)	5.2	< .01
	Motor (raw score)	13	31.2 (17.0)	40.7 (20.7)	5.1	< .01
	Mental (Developmental Index)	13	67.8 (21.2)	69.7 (22.4)	0.7	.50
	Motor (Developmental Index)	13	62.0 (15.3)	68.5 (21.6)	2.4	.03
Stanford-Binet						
	Mental Age	5	36.0 (7.0)	47.2 (6.6)	8.5	< .01
	Intelligence Quotient	5	78.6 (14.7)	81.2 (12.6)	1.1	.30

* Standard Deviation in parenthesis

TABLE 9

Child Progress: Correlated T-Test Analysis of Predicted Versus Observed Post-Intervention E/LAP Performance

	Mean Developmental Age in Months					
Scale	Pre-Intervention	Estimated Post-Intervention*	Observed Post-Intervention	N	T-Value	Two-Tail p-value
Gross Motor	9.9 (9.3)**	14.4 (12.6)	12.9 (10.3)	14	-1.6	.14
Fine Motor	8.4 (8.1)	12.3 (11.3)	14.4 (11.7)	15	1.5	.16
Cognitive	7.6 (7.0)	11.7 (10.9)	13.2 (9.9)	15	1.0	.33
Language	6.9 (7.2)	9.7 (10.3)	12.0 (9.6)	15	1.0	.31
Self-Help	13.1 (7.0)	21.4 (10.0)	20.2 (8.2)	15	-0.5	.65
Social-Emotional	11.2 (10.1)	17.2 (15.6)	16.0 (12.6)	15	-0.5	.64

* Estimated Post-Intervention scores are derived from Pre-Intervention performance scores.

** Standard Deviation in parenthesis

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TABLE 10

Child Progress: Correlational Analysis of Potential Sources of Impact

	Potential Sources of Impact						
	PBP Post-Test Rating	Number of Home Visits	CHR Time in the Home	Severity of Handicap	Child's Post-Test Age	Child's Sex	Length of Intervention
1. E/Lap Developmental Level Change Score (DI-Post - DI-Pre)							
a) Gross Motor	.38 (12)*	-.24 (14)	-.36# (14)	-.66## (14)	-.38# (14)	.20 (14)	-.12 (14)
b) Fine Motor	.37 (13)	-.23 (15)	-.57# (15)	-.72## (15)	-.37# (15)	-.26 (15)	-.51# (15)
c) Cognitive	.65## (13)	-.35# (15)	-.43# (15)	-.44# (15)	-.18 (15)	-.38# (15)	-.44# (15)
d) Language	.48# (13)	-.12 (15)	-.06 (15)	-.17 (15)	-.04 (15)	.20 (15)	-.21 (15)
e) Self-Help	.33 (13)	-.01 (11)	-.27 (11)	-.38 (11)	-.42# (11)	.41# (11)	-.56# (11)
f) Social-Emotional	.30 (13)	.01 (15)	-.42# (15)	-.35# (15)	-.31 (15)	.17 (15)	-.41# (15)
2. Severity of Handicap Rating	.35# (17)	.45# (16)	.48# (16)	--	.20 (16)	.88## (21)	.22 (16)

* N of Cases in Parentheeis
\# p .10
\## p .01

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